Application # FA1- 00611-1 (CIRM Institute)

PROPOSAL:

This application proposes renovations to a single-story, high-bay warehouse located on a medical center campus to convert a portion of the space for use as stem cell research space. About 17,200 gross square feet (gsf) of the 109,000 gsf warehouse space has already been renovated and is occupied. That space houses a Clinical and Translational Science Center that is part of a national consortium that facilitates new ways to enhance clinical and translational research. This project would convert an additional 54,200 gsf of what is essentially shell space to house highly developed laboratory space and related support space. The remaining 37,600 gsf will be built out in a future phase of development and is intended to include additional laboratory space and a major lecture space to serve the campus.

The CIRM Institute will provide 38,947 asf to co-locate the institution's key stem cell researchers (currently housed in several locations) and to provide new core facilities in support of stem cell research. The goal of the project is to "effectively connect the basic and translational studies with clinical trials, and provide an intellectual home for stem cell research." The application indicates that the total project cost is $61,770,588 and requests CIRM funding of $26,059,275. At occupancy, the facility will house 14 Principal Investigators (PIs), many of whom focus on disease-specific research, along with a core laboratory. Also included is flexible space intended to support an additional 17 PIs who are primarily based elsewhere on the campus, but would be located in the facility on a part-time basis. The key core space included in the CIRM project includes a stem cell bank, a six-station GMP facility, a specific pathogen-free barrier vivarium, and a cell sorter core laboratory. Completion of the project is scheduled for July 2010.

Space Summary Table

Space Category	Amount of Space (asf)	Percent of Total	Asf per PI at 14 PIs
Lab, Lab Support, PI Offices	19,596	50%	1,400
Core Facilities	14,857	38%	1,061
Other Offices	3,072	8%	219
Admin and Support	1,422	4%	102
Total	38,947	100%	2,782

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STAFF ANALYSIS

VALUE:

Costs:

Cost Summary Table

Cost Category	Application Amount	Revised Amount	Revised Amount/PI
Building	$56,136,898	$48,737,684	$3,481,263
Group 2 Equipment	5,633,690	5,633,690	402,406
Total	61,770,588	54,371,374	3,883,670
CIRM Amount	26,059,275	26,059,275	1,861,377
Applicant Amount	35,711,313	28,312,099	2,022,293

The estimated total project cost is $61,770,588. This estimate, however, includes work that has already been completed or is underway on infrastructure improvements needed to transform the building from a warehouse to a research facility. This work includes seismic upgrading of the building ($2.1 million), off-site utility development to provide hot water and chilled water (for heating and cooling the building) two sources of normal electrical power and emergency power ($8.4 million), and development of a stand-alone utility building that will house mechanical and electrical service components ($4 million). Because the CIRM-funded project will occupy 50 percent of the total space in the building, it is appropriate to include a proportionate share of these infrastructure improvements as part of the project costs. In considering what would be allowable infrastructure costs, CIRM advised applicants that while site preparation improvements such as the seismic upgrade would count toward project funding and thus toward leverage, off-site utilities would not be considered part of the CIRM funded project costs. These improvements, however, are not normally provided for in general laboratory space. They are required to support a highly specialized Good Manufacturing Practice (GMP) facility, which demands redundancy in utility systems not normally provided for in general laboratory space. It is reasonable to include half the costs of these centralized off-site services in so far as they are in lieu of providing stand-alone systems that would be less efficient to operate and would otherwise be included in the project cost. The cost summary table above shows the original budget including all of the infrastructure investments as part of the project and the revised budget of $54,371,374 that includes 50 percent of the cost of these improvements as the CIRM-funded project's prorated share of these costs. Most recently, the applicant (see comment letter of March 25th) indicates that the revised cost as presented here is correct in portraying the site preparation and utility costs that specifically applies to the CIRM-funded project.

The following analysis is based on the budget as revised.

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The estimated total project cost of $54,371,374 includes construction costs of $38,905,350, project management and administrative costs of $7,355,576, a contingency of $2,476,757 and Group 2 Equipment of $5,633,690 to be purchased as part of the project. Existing equipment and newly purchased equipment valued at $1.9 million to be relocated to the facility.

The construction cost of $899/gsf is somewhat below the average ($938/gsf) for applications in this funding category. This cost includes the prorated share of the above noted infrastructure improvements representing a cost of $136/gsf that have been completed or are about to be completed in preparation for construction of the CIRM Institute. Thus, the cost of just the interior alterations is $763/gsf or about 82 percent of the average for this category. The applicant indicates that the warehouse conversion proved superior to other options that were considered in that it has high ceilings to accommodate interstitial mechanical space, it could be developed in phases as funding becomes available with little disruption to occupants, and it could be developed with no major environmental issues. Typically, alterations should not cost more than 65-70 percent of a new building In this case, however the project includes development of a GMP facility that is utility intensive and expensive to construct, and therefore the overall cost of the alteration, although 82 percent of the cost of new buildings requested in this category, is reasonable.

The amount budgeted for Group 2 equipment $5.6 million) represents a cost of $104/gsf. In addition, existing equipment valued at $1.9 million will be relocated to the building. The combined budget for existing and equipment to be purchased as part of the project ($7.6 million) represents a cost of $140/gsf. This is comparable to equipment budgets for typical laboratory projects.

The CIRM cost for laboratory and PI related space (excluding cores) is $1,151,323 per PI which is 71 percent of the average ($1,620,927) for all Institute applicants.

Sustainability & Innovation

The applicant indicates that the project will comply with the University of California's policy on Green Building Design and Clean Energy Standards of June 16th, 2004. The policy calls for an evaluation of the design equivalent to "certified" under LEED.

The application indicates that in addition to having "recycled" an existing warehouse shell for use as a research building with 98 percent of the exterior warehouse façade being retained, other sustainability design elements include energy efficient systems and post-consumer products.

Elements of the application cited as innovative include connection of the facility to the onsite cogeneration plant that will provide two sources of normal power (gas-fired turbines and dedicated direct service lines from the serving utility company) and emergency power (from a bank of generators). This will avoid the need for costly redundant on-site systems needed to serve the GMP, vivarium and other critical loads.

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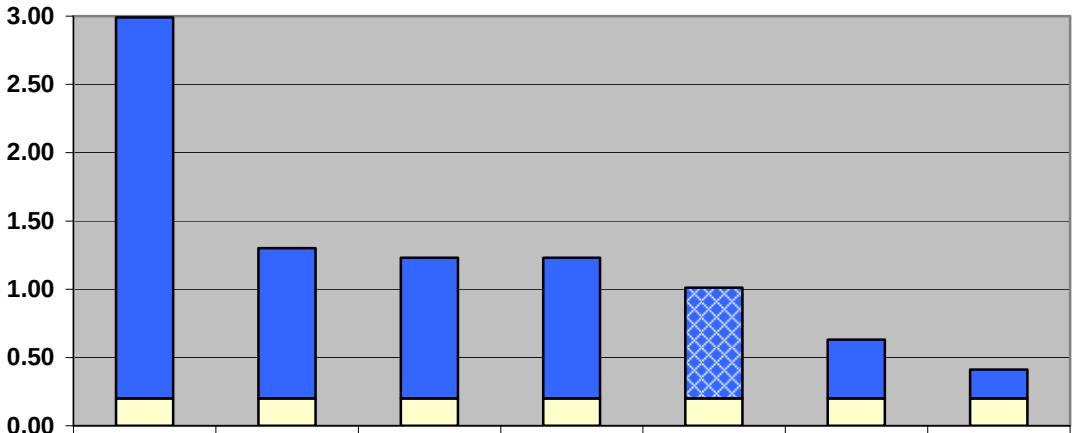
LEVERAGE:

The application includes leverage of $27,360,926. This represents the institutional investments in excess of the required matching funds after conforming to the allowable amount of fees and administrative costs. The CIRM funds to leverage ratio is 1:1.05. In the cost section above, we note that only a portion of the cost included in the project related to upgrading of the building should be considered as part of the project and as part of leverage. When the leverage is adjusted to the updated costs, the adjusted leverage is $20,978,293 with the CIRM funds to leverage ratio of 1:0.81. When both the matching and adjusted leverage funding are considered, the ratio rises to 1:1.01. The following table compares the leverage for this application to the other applicants in the category of CIRM Institute.

Matching and Leverage Ratios --Applications for CIRM Centers of Excellence



	609	607	618	619	611	612	613
Leverage	2.79	1.10	1.03	1.03	0.81	0.43	0.21
Matching (.20)	0.20	0.20	0.20	0.20	0.20	0.20	0.20

URGENCY:

The proposed facility has been in planning for over two years. Given that the project is an alteration to a one-story high-bay structure, construction access and logistics will be easier than in a multi-story facility. The work has been organized into three phases:

- Phase 2 is primarily space for the "Z" (pre-clinical) component of the program, including the GMP facility and is to be completed and certified by October 2009.
- Phase 2A consists of primarily the Y (translational) program space and the work for this program is scheduled to be completed in February 2010.
- Phase 2B includes the X (basic discovery) space and is to be completed in May 2010.

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The project qualifies for priority consideration because completion is projected within two years from approval of the grant.

The applicant's team for managing delivery of the project has considerable depth of experience, though the applicant does not say that the chosen architect and contractor have previously worked together. The contractor has completed life science facilities at several major universities.

SHARED RESOURCES:

The applicant institution has a variety of specialized core facilities that will be available to researchers in the stem cell program. These specialized core laboratories include the Genome Center, National Primate Research Center, NIH Center of Excellence in Translational Human Stem Cell Research and Mouse Biology Program among others. These laboratories will reduce costs to CIRM by providing services to CIRM funded researchers on a recharge basis at a cost that is lower than funding new space to house these cores within the dedicated stem cell program. The application notes that the breadth of campus programs including both veterinary medicine and animal science will provide an important resource for investigators using animal models.

Cores:

- Genome Center
    - Metabolomics
    - Proteomics
    - DNA Technologies
    - NMR
    - Mass Spectrometry Laboratory
- UC Davis CIRM Translational hESC Shared Research Facility
- California National Primate Research Center
- NIH Center of Excellence in Translational Human Stem Cell Research
- NIH Center for Fetal Gene Transfer for Heart, Lung, and Blood Diseases
- Veterinary Medical Teaching Hospital
- Mouse Biology Program and Mutant Mouse Regional Resource Center
- Department of Animal Science
- Molecular Imaging Program
- Cancer Center
- Center for Biophotonics Science and Technologies
- Collaboration with Lawrence Livermore National Laboratories
- Collaborations with Shriners Hospital and VA Hospital at Mather
- Collaboration with ThermoGenesis

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- CTSC
    - Translational Technologies, Resources, and Methodologies
    - Research Education, Training, and Career Development
    - Stem Cell Training Program; Community Engagement
    - Services for Investigators
        - Biomedical Informatics
        - CTSC Clinical Research Center
        - Design, Biostatistics, and Clinical Research Ethics
        - Regulatory Knowledge and Support
- Institute for Data Analysis and Visualization
- Center for Health and Technology
- Stem Cell Program
    - Immune Deficient Mouse Core (under construction)
    - FACS Core (under development)
    - Collaboration with Jackson Laboratories West (mouse services)

FUNCTIONALITY:

The proposed facility design adapts a single-story high-bay space to research use. The layout of the laboratories and the core facilities will provide flexibility and good opportunity for interaction among researchers working in different elements of the overall program. The facility has been organized into six major blocks of space of which three are being constructed as part of this project. There is also flexibility in that the undeveloped space could easily be developed to meet expanded programs need with little disruption to the existing building tenants. The amount of support space is generous in comparison to other proposals in this category of application and thus, there is amply opportunity to provide part-time researchers access to the facility. The six GMP work-stations provide good production through-put and adequate capacity. The building is conveniently located near both clinical and research centers of this campus. Interactive space is provided.

SUMMARY OF ISSUES FOR THE FACILITIES WORKING GROUP EVALUATION

Cost & Leverage: Will the FWG accept the revised infrastructure investments in building-wide improvements (a reduction of 50 percent) that benefit more than the CIRM-funded space?